

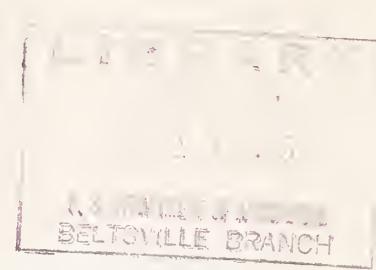


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MARKETING RESEARCH REPORT NO. 764



POOLING BY FLORIDA CITRUS COOPERATIVES FOLLOWING THE 1962 FREEZE

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FARMER COOPERATIVE SERVICE • U.S. DEPARTMENT OF AGRICULTURE
IN COOPERATION WITH THE
FLORIDA AGRICULTURAL EXPERIMENT STATIONS • UNIVERSITY OF FLORIDA

UNITED STATES DEPARTMENT OF AGRICULTURE
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The Farmer Cooperative Service conducts research studies and service activities of assistance to farmers in connection with cooperatives engaged in marketing farm products, purchasing farm supplies, and supplying business services. The work of the Service relates to problems of management, organization, policies, financing, merchandising, produce quality, costs, efficiency, and membership.

The Service publishes the results of such studies; confers and advises with officials of farmers' cooperatives; and works with educational agencies, cooperatives, and others in the dissemination of information relating to cooperative principles and practices.

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Contents

	<u>Page</u>
Highlights	v
Introduction	1
Florida Citrus Cooperatives	2
Local packinghouse cooperatives	2
Participation plan cooperatives	2
Processing cooperatives	2
The December 1962 Freeze	3
Cooperative Operations in the 1962-63 Season	3
Operations of local packinghouse cooperatives	5
Benefits of cooperative membership	5
Production area	8
Processing affiliation	8
Seasonal volume	8
Pooling	8
Operations of processing and participation plan cooperatives	13
Pooling	14
Conclusions	15

Highlights

Conventional pooling arrangements of Florida citrus cooperatives were severely tested during the destructive freeze of December 1962. Changes made in standard cooperative practices during this period raised questions about the fair and equitable treatment of members. Two key measures of efficient and effective service to growers, (1) on-tree returns and (2) percentage of crop lost, provide guides for answering these questions and for directing future courses of action in the event of similar disasters.

Cooperatives have an important role in the Florida citrus industry. In the 1962-63 season, the 27 local packinghouse associations included in this study accounted for 17 percent of the oranges, 20 percent of the grapefruit, and 23 percent of the tangerines harvested. The 6 participation plan cooperatives accounted for 24 percent of the oranges and 9 percent of the grapefruit used by all processors. The 3 processing cooperatives handled 13 percent of the oranges and 18 percent of the grapefruit used by all processors. The substantially higher on-tree prices and lower percentages of crop lost by cooperative members, as compared with industry averages during the period, show the advantages of cooperative membership in times of disaster.

Cooperative packinghouses with large-scale operations were generally better staffed and equipped than smaller associations to harvest their members' fruit rapidly and with less loss. Ownership of processing facilities by local packinghouse cooperatives assured their grower-members an outlet for processing fruit, and a share in the increasingly valuable inventories of finished products.

Local packinghouse cooperatives not only provided a market for the growers' fruit, but also the picking and hauling services that were so essential to fruit salvage. Participation plan cooperatives also arranged for picking and hauling of their members' fruit. Processing cooperatives generally included local packinghouse associations in their membership rather than individual growers, and thus had no reason to provide picking and hauling services.

Responsibility for harvesting and marketing fruit, together with the special cooperative requirements for maintenance of fair and equitable treatment among members, brought special problems to these associations. One problem was how to harvest the most fruit in the least amount of time, thus maximizing total revenue to the cooperative, and at the same time treat all members alike.

Many different pooling arrangements are used by Florida cooperatives. Before the freeze, 5 local packinghouse cooperatives used 5 different single pooling arrangements for oranges, and 22 associations used 15 different multiple pooling arrangements for processed oranges.

After the freeze, many organizations made changes in their pooling arrangements. Some cooperatives simply closed their pools at the time of the freeze and began again on the same basis after the freeze. Other changes were efforts to make pools accurately reflect the value of each grower's fruit, or to insure equal treatment of members. Most of these changes affected pooling arrangements for the remainder of the season only.

A most significant change was made by 6 local packinghouse cooperatives that adjusted their pools for fruit not picked. If a member's fruit was not picked because crews were busy elsewhere, he would be given credit in the pool, usually based on an early season estimate of his crop volume.

Use of this adjusted basis for dispersing pool returns allowed management to harvest fruit in the most efficient manner possible. Through this arrangement, management was able to concentrate on getting the highest possible total return from available fruit, instead of harvesting a fair share of each member's fruit. On-tree prices averaged about the same for local packinghouse associations using either the adjusted or the actual-volume basis for dispersing pool returns, but the percentage of crop lost was much lower for members of those cooperatives that adjusted pools for fruit not picked.

Inequities in the adjusted method of dispersing pool returns that might grow out of dependence on early season estimates could

be minimized by making a damage appraisal immediately after the freeze. Such an appraisal would update the earlier estimate and give full consideration to variations in fruit damage and costs of picking and hauling. Advance planning in all these matters would alleviate problems and assure membership understanding in a time of disaster.

Pooling methods of participation plan and processing cooperatives were much the same as those used by local packinghouse associations. However, only one of these, a processing cooperative, made any changes in pooling methods after the freeze.

Average on-tree prices for oranges to growers using the services of these organizations exceeded State average prices for processing fruit by 50 percent for participation plan cooperatives and by 75 percent for processing cooperatives. Average on-tree prices for grapefruit exceeded the State average for processing fruit by 75 percent for participation plan cooperatives and by 123 percent for processing cooperatives.

Pooling By Florida Citrus Cooperatives Following The 1962 Freeze

By

Fred E. Hulse, Julian R. Meitin,
and H. G. Hamilton¹

Introduction

In early December 1962, Florida experienced an extensive freeze that caused severe damage to all citrus in the State except in the Indian River Area. With more than 85 percent of the season's citrus crops on the trees, this was a major disaster.

Immediately after the freeze, an embargo was placed on out-of-State shipments of fresh fruit. However, experience had proven that freeze-damaged fruit could be used successfully in processed products, provided the fruit was picked before fermentation and decay set in. The citrus industry had to move quickly to salvage mature fruit.

Florida citrus cooperatives worked efficiently in this salvage operation, but many standard cooperative practices were modified in the process. These changes raised questions about the fair and equitable treatment of mem-

bers. As a result, Farmer Cooperative Service and the Department of Agricultural Economics, University of Florida, undertook this study of pooling practices to learn how successfully Florida citrus cooperatives had maintained the dual standards of equal treatment and efficient operation.

Specific objectives of the study were to determine:

- (1) The type of pooling arrangement in effect at the time of the freeze;
- (2) the changes made in pooling systems after the freeze;
- (3) The effect of changes in pooling arrangements on organization income and members' equity; and
- (4) the nature of future modifications that can be made in pooling arrangements that will handle problems in a distress situation.

Management's concern for maximizing total revenue and for maintaining fair and equitable treatment of members were the major considerations of this study.

A personal interview with the manager or financial officer of each of 37 Florida citrus cooperatives provided a complete picture of the business activities of these organizations during the 1962-63 season. The number of boxes handled, the on-tree value of members'

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fruit, and the services rendered by the associations were obtained, along with a record of each pooling system and any changes made in the pooling operations as a result of the freeze.

Although this study examines the pooling practices of Florida citrus cooperatives as they were affected by the 1962 freeze, much of what was learned could apply to other circumstances involving crop damage.

Florida Citrus Cooperatives

The 37 citrus cooperatives included in this study are of three distinct types: Local packinghouse cooperatives, processing cooperatives, and participation plan cooperatives.

Local Packinghouse Cooperatives

The 27 local packinghouse cooperatives included in this study generally pick their members' fruit and haul it to the packinghouse, where it is packed for fresh market. Sales are handled by the local association or an affiliated sales agency. Most local cooperatives are affiliated with a processing organization that manufactures and sells citrus products. Many associations also provide their members with grove caretaking services, including in some cases the planting and cultivation of new citrus acreage.

Although arrangement for processing of members' fruit is an important service of the local packinghouse cooperative, 4 of the 27 cooperatives had no processing affiliation at the time of the 1962 freeze. Of the remaining 23 associations, 2 owned their processing facilities, 1 had a cost-plus arrangement with a processor, and 1 large organization had an arrangement to participate in the profits of a number of other processors. The other 19 were member-owners of 1 of the processing cooperatives. In general, these local packing associations held membership in only 1 processing cooperative, but at times local associations were members of 2 or more processing organizations.

Participation Plan Cooperatives

Six cooperatives operated participation plans, or bargaining associations as they are sometimes called. These cooperatives operate under a plan that enables growers and processors to share risks and profits from processing and marketing.

Each association contracted with a processing organization for the processing of its members' fruit. These organizations arranged for the picking and hauling of members' fruit, and, in some cases, for grove caretaking services. As a special service, 2 of these associations helped their members find markets for fresh fruit. Their activities were in most cases closely coordinated with the operations of the contracting processors. None of these cooperatives owned facilities for performing any type of member service.

The 6 participation plan cooperatives had three types of contracts with processors: 3 held membership in a processing cooperative; 2 arranged a cost-plus contract with a processor; and 1 developed an arrangement with a processor to handle its members' fruit on a carefully computed cost basis.

Processing Cooperatives

The 4 processing cooperatives performed all marketing operations for their members once fruit was delivered to the processing

plant. These organizations performed no production or harvesting services. Members included local packinghouse cooperatives,

private fresh-packing firms, a few very large growers, and participation plan cooperatives.

The December 1962 Freeze

Florida citrus growers, like most agricultural producers, have experienced the adversities of storm, freeze, and economic hardship. In recent years, freezes have been most destructive.

The freeze of December 1962 was severe enough to cause extensive damage in all the important citrus-producing areas of Florida except along the Indian River on the east coast of the State. (See figure 1 for a graphic delineation of the Florida citrus production areas.)

The Florida Citrus Commission, after an evaluation of the situation, placed a total embargo on interstate shipments of fresh citrus from December 17 to December 27, 1962, and an embargo on damaged fruit up to January 10, 1963. This effectively ended fresh fruit outlets as a salvage possibility. The rush to move fruit to processing plants began immediately.

For the State as a whole, more than 85 percent of the citrus crop was still on the trees when the freeze occurred. In early December, the U.S. Department of Agriculture had estimated the Florida citrus crop for the 1962-63 season at 120.5 million boxes of oranges, 38 million boxes of grapefruit, and 4.3 million boxes of tangerines.

Immediately after the freeze, processors began salvage operations. The relatively slow rise in temperature after the freeze prevented the onset of immediate spoilage, and as a consequence a sizable proportion of the mature frozen fruit was utilized.

The relative effect of the freeze upon the operations of cooperatives in each of the four areas classified by degree of cold damage is important in comparing operational results for the season.

Cooperative Operations in the 1962-63 Season

The volume of fruit handled and the on-tree value of members' fruit for the 1962-63 season were obtained from all local packinghouse cooperatives included in this study. Information on financial operations was obtained for 25 of the 27 local packinghouse cooperatives; for 3 of the 4 processing cooperatives; and for all 6 participation plan associations.

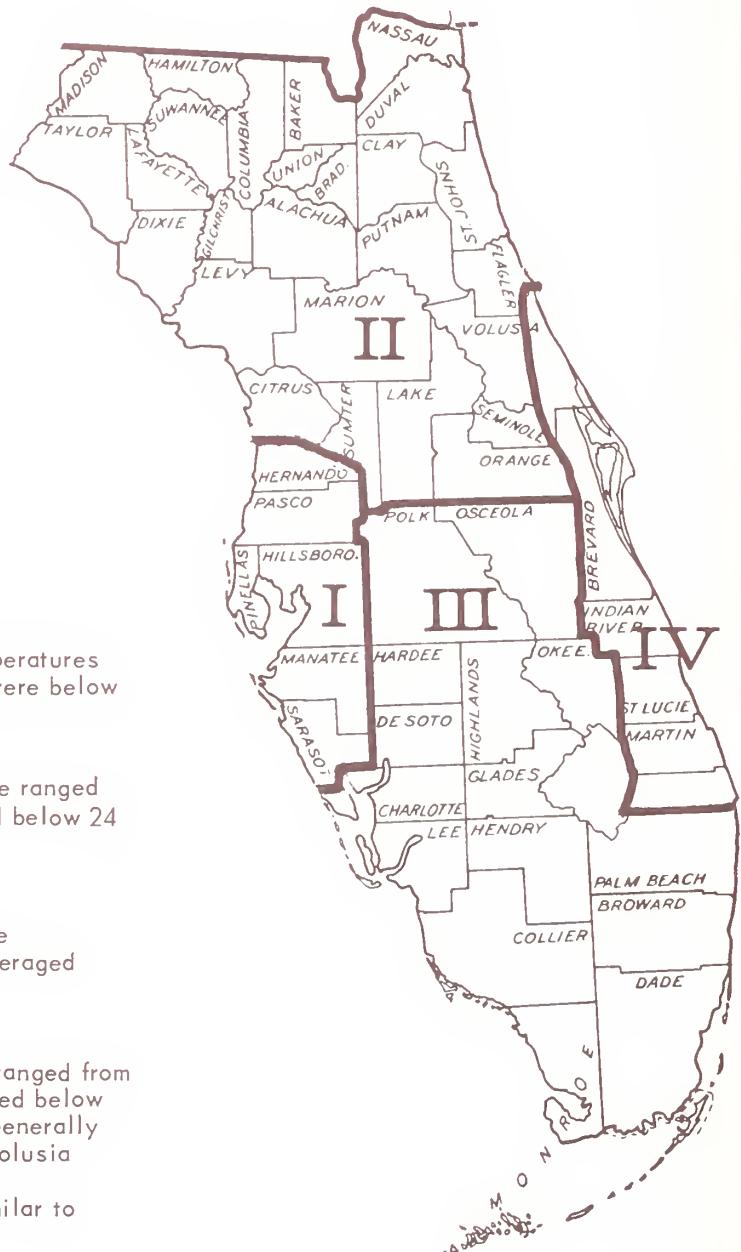
Most cooperatives made a preseason estimate of their expected volume of each kind and variety of fruit. This estimate of the

members' crop, less the final pickout realized, shows the volume lost due to the freeze. Preseason estimates of participation plan associations and processing cooperatives were not as detailed as the estimates of local packinghouse cooperatives.

Only a few of the local packinghouse associations could not furnish preseason estimates of their members' volume. When an estimate was not available, one was assigned to the organization. In areas I, II, and III, assigned

FIGURE 1
**FLORIDA CITRUS PRODUCTION AREAS BY
 COLD EXTREMES, DEC. 1962 FREEZE**

- I- WEST COAST- hardest hit - temperatures ranged from 14 to 18 degrees and were below 24 degrees for 13-20 hours.
- II- NORTH CENTRAL- temperature ranged from 18 to 22 degrees and averaged below 24 degrees 14 hours.
- III- SOUTH CENTRAL- temperature ranged from 18-22 degrees and averaged below 24 degrees 9 hours.
- IV- INDIAN RIVER- temperature ranged from the middle to high 20's and averaged below 24 degrees for only a few hours. Generally escaped major damage except in Volusia and upper Brevard Counties where temperatures followed patterns similar to the West Coast Area.



Source: U.S. Weather Bureau.

estimates were based on crop loss data for fruit types in various areas of the State published by the Florida Crop and Livestock Reporting Service. For the one organization located in the Indian River section, district IV, the assigned preseason estimate was based on the experience of all cooperatives in the area.

Operations of Local Packinghouse Cooperatives

BENEFITS OF COOPERATIVE MEMBERSHIP

Cooperative membership proved a twofold benefit to growers in the hectic days immediately after the freeze. A comparison of on-tree prices and percentage of the crop lost for 25 local packinghouse cooperatives and the entire Florida citrus industry shows the advantages of cooperative membership during this period (table 1).

For both oranges and grapefruit, members of cooperatives realized a higher average on-tree price than the industry generally. The

percentage of the grapefruit and orange crop lost was substantially lower among cooperatives than for the industry.

For tangerines, the percentage of the crop lost did not favor cooperative membership, and the average price for the industry was higher than that for the cooperatives. This was in part because the cooperatives, unlike many independent growers, attempted to salvage some tangerines. This salvage effort by cooperatives led to a somewhat lower crop loss and a lower average price because tangerines for processing bring comparatively poor returns.

The industry averages reflect the activity of both the independent growers and the cooperative growers. Therefore, the on-tree price received by the independent growers and their percentage of crop lost are in reality less favorable than industry averages indicate. Averages for the independent growers could not be calculated because not all cooperatives participated in the study.

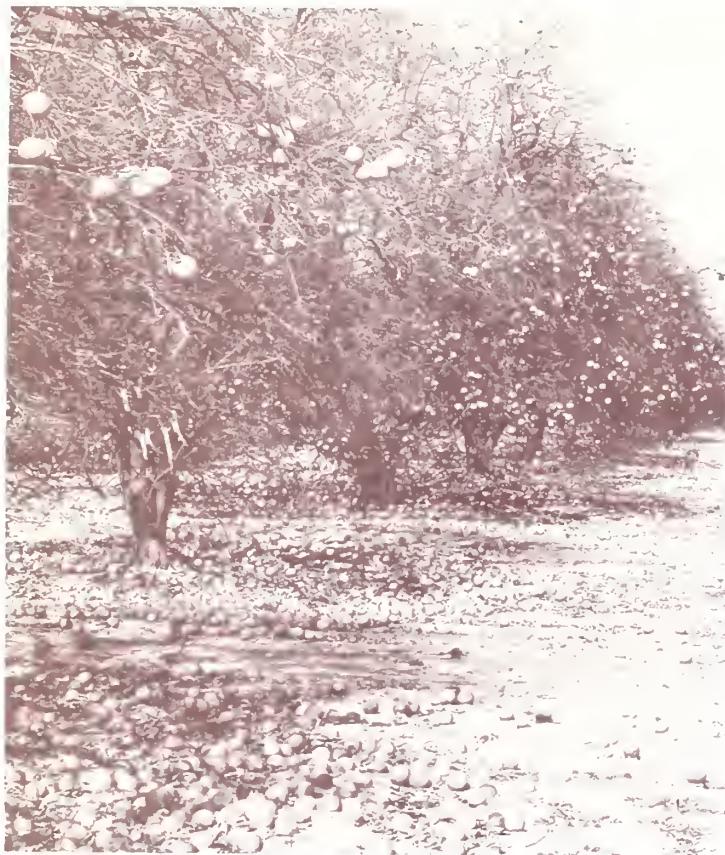
In addition to a higher on-tree price and a lower percentage of crop lost, the cooperative member had an assured market for his fruit.

TABLE 1.—Total volume of fruit harvested, average on-tree prices, and percentage of crop lost by members of 25 local packinghouse cooperatives and the Florida citrus industry, by kind of fruit, 1962-63 season

Kind of fruit	Volume harvested		Average on-tree box price		Average crop lost	
	Cooperatives	State industry ¹	Cooperatives	State industry ¹	Cooperatives	State industry ¹
	1,000 boxes	1,000 boxes	Dollars	Dollars	Percent	Percent
Oranges ²	13,099	75,250	2.50	2.05	28.8	38.0
Grapefruit	6,124	30,000	1.30	1.17	13.5	21.1
Tangerines	469	2,000	2.61	2.83	49.4	53.5
All fruit	19,692	107,250	2.13	1.82	25.4	34.5

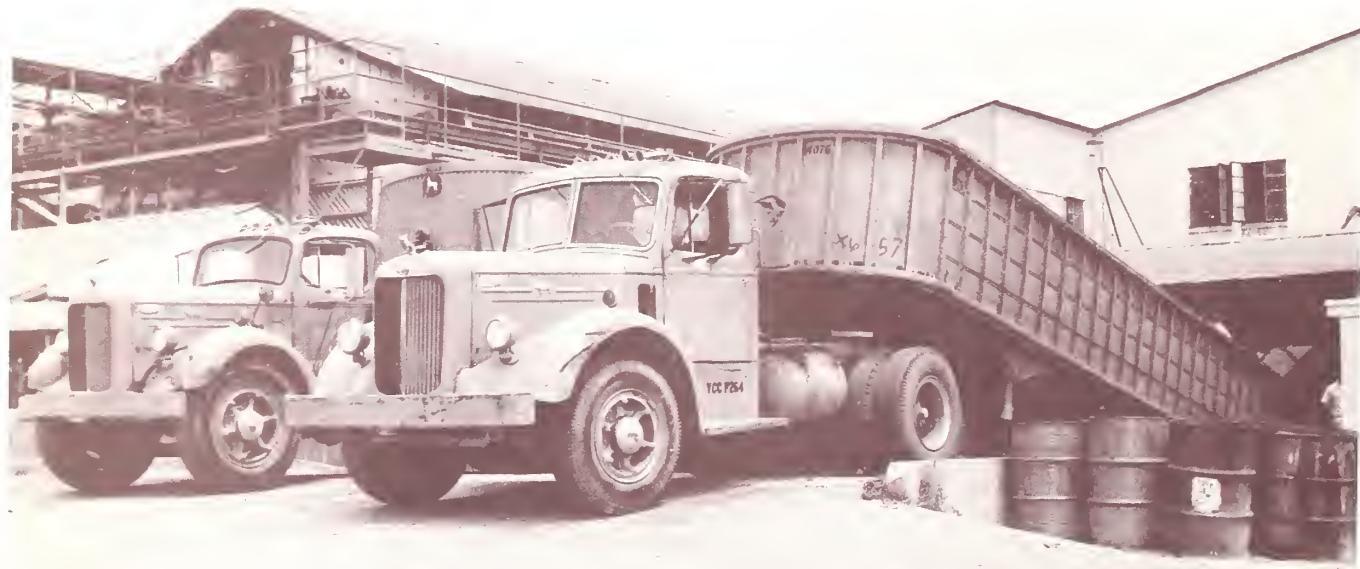
¹ Florida Crop and Livestock Reporting Service, Orlando, Fla.

² Includes tangelos.



Much of the mature fruit remaining on the trees after the 1962 freeze could be used in processed products, provided it was harvested promptly. Severely damaged grapes, like these, were frequently left until less damaged and better yielding grapes were harvested.

Available equipment and access to large-scale processing facilities helped cooperatives keep the crop losses of their grower-members at below-average levels.





All available labor resources were utilized in an attempt to salvage as much mature fruit as possible. The evaporating capacities of concentrate plants were therefore taxed to the limit.

This inspector is determining the sugar and acid content of a sample of processing oranges. The sugar (or solids) content provides an accurate measure of fruit value and an equitable basis for paying growers' returns. However, after the 1962 freeze, some cooperatives modified their methods of paying growers to account for fruit not picked.



Independent growers in the industry had a very difficult time salvaging fruit at any price after the freeze because most harvesting firms were preoccupied with existing contracts.

PRODUCTION AREA

Freeze damage varied among the four production areas (fig. 1). Cooperative members suffered crop losses in direct relationship to the pattern of cold severity in the respective production areas.

In the hard-hit West Coast and North Central Florida Areas, many cooperatives closed their packinghouses through the 1963-64 season. In the Indian River Area where damage was very light, some cooperatives shipped more grapefruit in the 1962-63 season than preseason estimates had indicated was available. This resulted because high prices prompted growers to pick small-sized grapefruit usually abandoned in a normal season.

PROCESSING AFFILIATION

Possibly the greatest single factor in lessening the impact of the freeze upon members of cooperatives was the arrangement providing an outlet for processing fruit. Because a large proportion of the 1962-63 crop went into processed products, the contractual relationship of local packinghouse cooperatives to processing outlets was most important. Those packinghouses that were member-owners of a processing cooperative not only had those facilities available, but they also owned the finished product inventories that increased in value as the short-supply situation became more apparent.

Local packinghouse cooperatives with no processing affiliation had to sell on the open market. Because most processors were hard pressed to handle fruit already under contract, it was difficult for unaffiliated cooperatives to find a processing fruit market.

SEASONAL VOLUME

A capacity for rapidly harvesting fruit was extremely important to growers in this period. Local packinghouse cooperatives that normally handled a large volume of fruit were generally able to harvest more rapidly than were smaller associations.

The larger cooperatives were staffed and organized to provide growers with a wide range of services. It was possible for these organizations to shift personnel and to make the best possible use of available sources of picking labor. Large organizations also had advanced in the use of mechanized harvesting aids.

POOLING

Pooling has been described as "a method by which a cooperative can handle and pay for members' produce. It can involve commingling of the products from many producers, the combining of sales returns and operating expenses, and the prorating of net returns among members in proportion to the volume of business each transacts through the cooperative over a certain period of time."²

Florida citrus cooperatives, which have a long history of pooling experience, serve as a good example of produce pooling in the United States. Florida's experience includes the pooling of both costs and returns.

It has always been the practice in handling fresh fruit to pool by variety, by grade and, in some cases, by rootstock. This still prevails where fruit for the fresh market is pooled separately from the processed fruit.

² Markeson, Clyde B., Pooling and Other Grower Payment Methods, As Used By Local Fruit, Vegetable and Tree Nut Cooperatives, U.S. Dept. Agr., Farmer Cooperative Serv. Gen. Rpt. 67, Dec. 1959, p. 4.

Fruit for frozen concentrate was originally pooled on a box basis without regard to grade, size, or solids. Today the trend is definitely to a pounds-solid basis which recognizes interior quality differences in fruit used for processing.

Single Versus Multiple Pooling Arrangements.--Single pools combine returns from both fresh and processed fruit in determining members' returns. Under this system, the member may never know whether his fruit went to the fresh or processed market, for he receives merely an amount for each box of fruit or pound of solids delivered.

Multiple pools separate and give specific valuation to members' fruit going to the fresh market and that going to the processed

market. For systems using multiple pools, a further classification is sometimes made to distinguish between different processed forms; for example, single-strength pool, or concentrate pool.

Although many cooperatives continue to use multiple pool systems, there is a definite trend to combine fresh and processed fruit into one pool or a single pool system.

Members' needs, fruit handling methods, and the kinds and varieties of citrus marketed are different for each organization, and all contribute to variations in pooling arrangements. Selected examples of pools in use at the time of the December 1962 freeze show some of the complexities of these arrangements (table 2).

TABLE 2.--Selected examples of grapefruit and orange pooling arrangements in effect at the time of the December 1962 Florida freeze

Pooling type	Kind of fruit	Details of pooling arrangement
Single	Oranges	Seasonal, early and midseason pooled together, Valencias and Temples pooled separately, box basis
	Grapefruit	Two pools, first 30 days, balance of the season, by variety, box basis
Multiple-fresh	Oranges and Grapefruit	Seasonal, by variety, grade and size, box basis
Multiple-processed forms combined	Oranges	Seasonal, early and midseason varieties pooled together, Valencias pooled separately, solids basis
	Grapefruit	Seasonal, by variety, box basis
Multiple-processed forms separate	Oranges	Seasonal, early and midseason varieties pooled together, Valencias pooled separately, solids basis
	Grapefruit	Two seasonal pools, one including all grapefruit for juice, the other including all fruit for sectionizing, box basis

Pooling Changes.--Changes in pooling arrangements after the freeze were relatively more frequent among cooperatives using single pools than among those using multiple pools (table 3).

Processing pools for local packinghouse cooperatives using multiple pooling arrangements can be classified two ways: (1) Those combining returns from all finished products into one pool, and (2) those using separate pools for different product forms.

The combining of returns from all processed orange products into one pool was somewhat more popular than separate pools for each product form with 12, or slightly more than half of the 22 cooperatives using multiple pools. For grapefruit, the combined-product pooling arrangement was markedly more popular with 16, or two-thirds of the 24 cooperatives using the method.

Cooperatives using the combined-product pools used a smaller number of different arrangements than those organizations using separate pools for different product forms.

Pooling changes were most numerous for oranges and least numerous for tangerines. The relative importance of certain fruits to the processing market is probably the reason changes in pooling methods affect one kind of fruit more than another.

All changes in pooling arrangements were made in an attempt to insure equal treatment of members, or to gain the highest possible return from available fruit. The adjustment of pools for fruit not picked was a common change for all kinds of fruit in single pooling arrangements and for oranges in multiple pooling arrangements (table 4). Adjustments were made in the growers' accounts for

TABLE 3.--Number of local packinghouse cooperatives using single and multiple pools before and after the December 1962 freeze, and number of cooperatives changing pooling arrangements after the freeze, by pooling type and kind of fruit, 27 associations, 1962-63 season

Pooling type and kind of fruit	Before the freeze		After the freeze	
	Cooperatives using	Different arrangements used	Cooperatives changing arrangements	Cooperatives using
Single pools:				
Oranges	5	5	5	7
Grapefruit	3	3	2	4
Tangerines	3	2	1	3
Multiple pools:				
Oranges				
Fresh	22	12	7	20
Processed	22	15	5	20
Grapefruit				
Fresh	24	16	4	23
Processed	24	14	5	23
Tangerines				
Fresh	22	9	3	22
Processed	22	2	2	22

TABLE 4--Changes in citrus pooling arrangements and number of cooperatives changing after the December 1962 Florida freeze, by pooling type and kind of fruit

Pooling type and kind of fruit	Change	Number of cooperatives changing ¹
Single:		
Oranges	Adjustment made for fruit not picked	3
	Pool changed from box to solids basis	3
	Pool ended with freeze and started again on same basis	1
	Pool changed from solids to box basis	1
Grapefruit	Adjustment made for fruit not picked	1
	Pool ended with freeze and started again on same basis	1
Tangerines	Adjustment made for fruit not picked	1
Multiple-fresh:		
Oranges	Adjustment made for fruit not picked	4
	Pool ended with freeze and---	
	started again on same basis	1
	new single pool started for all fruit or some varieties	3
Grapefruit	Pool changed from box to solids basis	3
	Pool ended with freeze and---	
	started again on same basis	1
	started again combining varieties	1
	handled only for grower's account	1
Tangerines	new single pool started	1
	Pool ended with freeze and---	
	started again on same basis	2
	handled only for grower's account	1
Multiple-processed:		
Oranges	Adjustment made for fruit not picked	3
	Pool changed from box to solids basis	1
Grapefruit	Pool changed from solids to box basis	2
	Pool ended with freeze and---	
	started again on same basis	1
	started again combining varieties	2
	handled only for grower's account	1
	new single pool started	1
Tangerines	Pool ended with freeze and---	
	started again on same basis	1
	handled only for grower's account	1

¹ Pooling arrangements, particularly single pools, were sometimes changed in more than one respect. Therefore, the number of cooperatives changing individual features of certain types of pooling arrangements may exceed the number of arrangements changed as shown in table 3.

unpicked fruit, or for losses in pounds-solids due to late harvest, or by allocating all returns to growers on the basis of the pre-season crop estimate.

Adjustments for fruit not picked affected mostly early and midseason oranges. Late varieties were not ready for harvest at the time of the freeze,

and they were pooled mostly on an actual pickout basis.

When pools terminated with the freeze and similar pools started immediately, the difference in value of fruit before and after the freeze was readily apparent. Also, when pools changed from a box to a solids basis, returns clearly reflected freeze damage.

Some associations terminated their pools for certain kinds and varieties of fruit at the time of the freeze and then continued to handle this fruit only for the individual grower's account. Selling for the grower's account put each lot of fruit on its own; prices received reflected freeze damage.

Although pooling on a solids basis provided an accurate measure of fruit value, some cooperatives shifted from a solids to a box basis after the freeze. Organizations making this change were smaller operations located in areas of heavy freeze damage. Shifting from a solids to a box basis tended to equalize returns where fruit could not all be harvested at one time. Differences in juice and solids content resulting from varying lengths of time the fruit remained on the trees would directly affect returns made on a solids basis.

Changes in pooling arrangements after the freeze were designed primarily for the duration of the 1962-63 season. Although this study did not examine practices in following seasons, it was assumed that most cooperatives re-

turned to pooling arrangements used prior to the freeze.

Dispersal of Returns.--After the freeze, 6 cooperatives decided to make an adjustment in their orange pools to credit members for fruit not picked (table 5). All of these organizations were located in North and South Central Florida, and all had processing affiliations. Ten cooperatives in these areas used an actual-volume basis for dispersal of returns.

Freeze damage to members' fruit was quite similar for cooperatives adjusting pools and for cooperatives using an actual-volume basis for revenue dispersal because of the proximity of their locations. Also, the average volume of oranges handled was similar for both groups--763,500 boxes for the 6 cooperatives that adjusted pools and 658,900 boxes for the 10 that used an actual-volume basis. Four of the 6 cooperatives that adjusted pools and 3 of the 10 organizations that used the actual-volume basis used the single pool arrangement. Thus, cooperatives that adjusted pools for fruit not picked were similar in many ways to those that paid out pools on an actual-volume basis.

On-tree prices were about the same--\$2.28 a box for those making adjustments, and \$2.27 for those using actual volume. However, the members' crop loss was 35 percent for the 10 cooperatives dispersing pool returns on the basis of actual volume delivered and only 20.4 percent for the 6 associations making adjustments for fruit not picked (table 5).

TABLE 5.--On-tree orange prices and percentage of crop lost by members of 16 local packinghouse cooperatives in North and South Central Florida, by bases for pool dispersal, 1962-63 season

Basis for pool dispersal	Cooperatives	On-tree box price		Crop lost
		Number	Dollars	
Adjusted for fruit not picked	6		2.28	20.4
Actual volume delivered	10		2.27	35.0

When a substantially higher proportion of the crop was harvested, such as was the case with members of cooperatives that adjusted pools, it would be natural to expect average prices to be lower. The last fruit harvested would normally be of lower quality than that harvested immediately after the freeze, and would thus adversely affect average prices. The total return is the most important figure, and this of course is affected by both unit price and volume harvested.

The method of revenue dispersal was not important in itself, but for what it allowed the cooperative management to do. Once the adjusted method of revenue dispersal was selected, management was free to harvest fruit in the most efficient manner possible. For cooperatives making adjustments, the groves harvested first were usually of large acreage, with high-yielding trees, located close to the processing plant.

In contrast, cooperatives using the actual pickout basis were forced to harvest about an equal proportion of each member's crop after the freeze. This led to many inefficiencies in picking and handling fruit. Much time was lost in moving from one small grove to another in contrast to the time saved when working a large, high-yielding grove.

In all but 1 of the cooperatives using the adjusted method of revenue dispersal, the adjustment was based on a preseason estimate of the volume of growers' fruit. Such a method demands that the best and most accurate estimates be made of each member's crop as each season progresses. One cooperative made adjustments based on pounds-solids lost for each day the fruit remained on the tree. This method did not account for fruit droppage due to a late harvest.

Although the adjusted method of revenue dispersal offers an excellent method of maximizing returns to all the cooperatives' growers, it can foster some inequities. For instance, by allocating returns to all members strictly on the basis of early season esti-

mates, differences in fruit damage may be overlooked. A grower whose fruit had the protection of a warm, and therefore more costly location, should receive a price which reflects these advantages. Growers whose fruit suffered from colder, less valuable locations should expect lower prices. A carefully formulated plan for adjusting revenue dispersal in times of disaster should give some consideration to relative crop damage.

Some consideration might also be given to differences in harvesting expenses for large and small growers. Admittedly, determining the cost differences for harvesting from various sizes of groves would be difficult, but the cost savings in harvesting from large acreages should be accorded the large growers.

The adjusted method of revenue dispersal is the most significant influence increasing the cooperative's returns to growers because it permits more efficient harvesting procedures. Actually, efficient harvesting procedures demand a method of revenue dispersal that makes possible the highest possible total return. The adjusted method meets these requirements.

Some cooperatives found this adjusted method of revenue dispersal so well suited to their needs in 1962 that they used it after the freeze of January 31, 1966.

Operations of Processing and Participation Plan Cooperatives

Many of the benefits of cooperative membership found in the local packinghouse association are available through participation plan cooperatives and through processing cooperatives that open their membership to growers. However, members of most processing cooperatives are either local packinghouse associations or large individual growers. The benefits of membership come to the

small grower through his local cooperative's affiliation with one of these processing organizations.

Through membership in these organizations, growers in 1962-63 realized on-tree prices that substantially exceeded the State average for both oranges and grapefruit used for processing (table 6). Average on-tree prices to participation plan members for oranges exceeded the State average of \$1.80 by 90 cents or 50 percent; prices for grapefruit exceeded the State average of 44 cents by 33 cents or 75 percent. The calculated average on-tree orange price for 3 cooperative processors exceeded the State average by \$1.36 or 75 percent; prices for grapefruit exceeded the State average by 54 cents or 123 percent.

In the case of participation plan cooperatives, the crop loss was about 1 percent lower than the State average. Crop loss estimates could not be calculated for cooperative processors or for grapefruit.

These participation plan and processing cooperatives handled very few tangerines. These organizations marketed no fresh fruit, except for 2 participation plan cooperatives that handled a small amount as a special service to their members. Generally, members of both types of organizations come from all areas of the Florida citrus belt and fruit is moved to processing plants from great distances. The small number of these organizations limits the opportunity for many operational comparisons, such as comparisons on a seasonal-volume basis.

POOLING

The pooling arrangements of processing, participation plan, and local packinghouse cooperatives are quite similar. Obviously, where only processing fruit was concerned, a single pooling arrangement was used. Multiple pooling arrangements were used by the 2 participation plan cooperatives that handled some fresh fruit.

TABLE 6.—Total volume of oranges and grapefruit handled, average on-tree prices, and percentage of members' crop loss, by type of organization and kind of fruit, 1962-63 season

Type of organization and kind of fruit	Total volume handled	Average on-tree box price		Crop lost ¹
		1,000 boxes	Dollars	
6 participation plans:				
Oranges	14,621		2.70	36.9
Grapefruit	1,378		.77	--
3 processors:				
Oranges	8,074		² 3.16	--
Grapefruit	2,814		² .98	--
All processors:				
Oranges	62,245		1.80	³ 38.0
Grapefruit	15,962		.44	³ 21.1

¹ The percentage of crop lost was determined only for oranges handled by participation plan cooperatives.

² On-tree prices to growers through affiliation with processing cooperatives were computed from delivered prices, less State average picking and hauling costs by type of fruit.

³ Percentage of crop lost is the State average for both fresh and processed utilization.

Four of the 6 participation plan cooperatives, but only 1 of the 4 processing cooperatives, used seasonal pooling arrangements for oranges. Although that processing association continued with the seasonal pool arrangement after the freeze, it made some adjustments to separate pools by variety. The new basis was the same as that used by the 4 participation plan cooperatives, but it represented the only post-freeze change in pooling arrangements made by any of these 10 associations.

Seasonal pools were used for grapefruit by 2 of the 4 participation plan cooperatives and by 2 of the 4 processing cooperatives. All other pooling arrangements were on a term or date basis with the season divided into periods.

Pooling arrangements for oranges favored the combining of returns from all product forms into one pool. Four of the 6 participation plan cooperatives and 3 of the 4 processing cooperatives used this arrangement.

Half the organizations handling grapefruit kept returns for products separate and half combined returns into one pool.

The following tabulation summarizes the data on pooling arrangements of processing and participation plan cooperatives:

	6 cooperative participation plans ¹	4 cooperative processors
Oranges:		
Processed forms combined	4	3
Processed forms separated	2	1
All arrangements	<hr/> 6	<hr/> 4
Grapefruit:		
Processed forms combined	2	2
Processed forms separated	<hr/> 2	<hr/> 2
All arrangements	4	4

¹ Two participation plan cooperatives did not handle any grapefruit.

The dominance of a single processed orange product, frozen orange juice concentrate, may have influenced these organizations to choose a combined-product orange pool. On the other hand, the relative importance of a number of processed grapefruit products may have made combined-product pooling arrangements less attractive to some organizations.

Nine cooperatives together controlled over one-third of the oranges and over one-fourth of the grapefruit used for processing in Florida during this difficult freeze year. They produced 55 percent of the on-tree income from processing oranges and 53 percent of income from processing grapefruit.

Conclusions

Many different pooling arrangements are used by Florida citrus cooperatives to meet the needs of their grower-members. The number of these arrangements reflects the wide variety of marketing situations involving a broad combination of marketing opportunities for different kinds and varieties of citrus.

Basic characteristics of the cooperative's location, processing affiliation, and size of operation are closely associated with pooling experience. Location greatly influenced fruit losses and grower returns during the 1962-63 season. The 23 local packinghouse cooperatives with processing affiliations had established arrangements for greatly needed facilities.

The large-volume houses were able to cut members' crop losses and make better returns to growers than smaller houses. Large labor forces and more equipment give larger organizations more flexibility in meeting emergency situations.

Some local packinghouse associations used single pooling arrangements combining returns for fruit of a given variety that goes to the fresh market with returns for like fruit going to the processed market. This arrangement gives management great flexibility as to what fruit will be sent to what market, and can materially aid in establishing efficient harvesting and other operational methods.

Most local packinghouse cooperatives pick and haul their members' fruit. This responsibility for efficient harvesting procedures, together with the requirement for fair and equitable treatment of members, was the reason for many changes in pooling arrangements after the December 1962 freeze.

Under freeze conditions, returns to growers can be maximized by harvesting fruit from the largest groves that are most accessible to facilities and that have the least freeze damage. At the same time, equal treatment of members can be assured by adjusting pool returns in the disbursement process for any fruit not picked, such as fruit from small, remote, and badly damaged groves.

Most associations make estimates of each member's fruit volume early in the season, well before the occurrence of a freeze. Cooperatives that adjusted pool returns for fruit not picked after the December 1962 freeze depended heavily on these estimates.

Some of the inequities that could grow out of dependence upon early season estimates, such as differences in harvest expenses or relative differences in cold damage, can be overcome by making an accurate, grove-by-grove damage appraisal immediately after the freeze. This appraisal could depend heavily on, and update, early season estimates; thus, it could be made quickly and accurately. It would also place a value on the fruit with full consideration for damage and for cost of picking and hauling. It would establish immediately after the freeze each grower's proportion of the total value of marketable fruit and provide a sound basis for disbursing pooled returns.

Advanced planning prior to an emergency such as the 1962 Florida freeze could minimize many problems cooperatives might face in the aftermath of such a disaster. In addition to establishing operational procedures and responsibilities, attention should be directed to determining needed changes in the cooperative's pooling practices. Members would then know how fruit was to be handled and how pool returns were to be made. This could be an important tool in improving relations with members, assuring growers that the practices and policies to be followed in such a disaster would best serve their needs.

Other Publications Available

Coordinated Marketing for Florida Fresh Citrus Shippers: Views on its Need and Feasibility, Marketing Research Report 492, Fred E. Hulse.

Fresh Fruit and Vegetable Marketing Organizations in the Northeastern and Central States, General Report 84, Martin A. Blum.

Economic Considerations in Marketing Sweetpotatoes from the Eastern Shore of Virginia, Marketing Research Report 487, Clyde B. Markeson, Frank W. Bell, and Leo F. Zimmerman.

Pooling and Other Grower Payment Methods as Used by Local Fruit, Vegetable, and Tree Nut Cooperatives, General Report 67, Clyde B. Markeson.

Marketing Virginia White Potatoes: Buyers' Preferences and Practices, Marketing Research Report 682, Harold K. Jolley and Frank W. Bell.

Fruit and Vegetable Bargaining Cooperatives, Circular 25, Wendell M. McMillan.

Using Your Fruit and Vegetable Co-op, Education Circular 7.

What Is a Co-op? Bulletin Reprint 6.

How Farmer Cooperative Service Works, Information 26.

Organizing a Farmer Cooperative, Circular 18.

Forming Farmer Cooperatives, Educational Circular 10.

A copy of each of these publications may be obtained upon request while a supply is available from:

Information Division
Farmer Cooperative Service
U.S. Department of Agriculture
Washington, D.C. 20250

